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ADDITIONS TO LOCAL RECORDS OF NEW JERSEY FISHES

The notes gathered together herewith are given as notice of additional localities to the State's faunal list which have not been recorded previously. Fowler's "A List of the Fishes of New Jersey"¹ has been used as a basis, it being the most recent comprehensive regional list of that territory. All material except that of the one fresh-water species was collected at Atlantic City from the Pounds operated from Young's Million Dollar Pier during 1920. The marine material, except as otherwise noted, is in the possession of the U. S. Bureau of Fisheries.

Polydactylus octonemus (Girard). Five examples were taken during July and August. The fishermen on the Pier did not recognize them, one even insisting that this species was a cross between a Catfish and a Shark!

The following notes are recorded as it is felt that existing descriptions are somewhat inadequate.

The specimens were of the following standard lengths (in mm.); males, 174, 160; females, 195, 164, 157. The total lengths were 250, 228; 275, 238, 221 respectively. The proportions were as follows, the range being given first, followed by the average; head, 3.09 to 3.16, (3.14); depth, 2.81 to 3.08, (2.96); eye, 4.35 to 5.00, (4.63); snout, 4.54 to 5.20, (4.92); maxillary, 2.17 to 2.29, (2.24); inter-orbital, 4.23 to 4.54, (4.37); ventral, 2.00 to 2.18,

(2.07); pectoral, 1.16 to 1.31, (1.22); longest pectoral filament, 2.45 to 3.09, (2.65); third dorsal spine, 1.37 to 1.66, (1.50); third anal spine, 3.94 to 4.59, (4.25); dorsal fin, VIII—I, $12\frac{1}{2}$; anal, III— $13\frac{1}{2}$ except in smallest individual which had III— $10\frac{1}{2}$; scales 6—(59-61)—(9-10). There appeared to be considerable variation in the number of pectoral filaments, as while eight is the usual number, the largest example in this series had but seven on a side. The next smaller example had eight on one side and seven normal on the other. The place of the eighth was occupied by a twined filament which rose from a double base and separated as two distinct filaments only to join again at a point about half-way to their common tip. The variations of the proportions do not appear to be correlated with sex except possibly that of the length of the third anal spine which is apparently higher in the male, the averages being respectively 4.03 and 4.57. Fowler makes no mention of this species occurring in Jersey waters at all.

Peprilus paru (Linnaeus). This species is not mentioned by Fowler although as noted in "The Fishes of Sandy Hook Bay" he refers in an earlier publication to a record made by Abbott in 1868. We took specimens on the first four days of July and one on the thirtieth of that month.²

Vomer setapinnis (Mitchill). One adult was taken on August 13 and numerous small ones were taken from time to time during the two months of our stay. Recorded only from Cape May County by Fowler. These specimens are deposited at the American Museum of Natural History.

Cottus gracilis Heckel. Taken near Great Notch, Passaic County on April 1, 1916. During the two subsequent years it was also taken and was quite common although only at a single point in the lone stream in which found. This locality is a small section of a trifling, unnamed creek that crosses the

Paterson Turnpike about a mile north of the State Normal School about a hundred feet above the crossing of two large water supply conduits. The only other fish life noted were a few *Rhinichthys atronasmus* (Mitchill) and a few small salmonoids which likely were planted stock which had found their way to that point. On November 24, 1921, this species was again taken and it had apparently held its own from the time of the last collection. No other fish were seen on this date. The only definite locality Fowler gives is from Warren County. Specimens taken on this last date are preserved in the American Museum of Natural History.

Echeneis naucrates Linnæus. One medium-sized example was taken on July 31. Fowler does not record it from Atlantic City, but makes note of it being taken just south of there in Cape May County.

Microgadus tomcod (Walbaum). This species is mentioned chiefly because of its unusual occurrence at this place in the middle of summer. On August 13 a single specimen was taken which had a length of 32 cm. As Fowler makes no specific mention of locality in his list the name is therefore included here.

C. M. BREDER, JR.,
N. Y. Aquarium.

¹Proc. Wash. Bio. Soc. Vol. 33, pp. 139 to 170. Dec. 30, 1920.

²Zoologica—Vol. II, No. 15. C. M. Breder, Jr.

A WOOD TURTLE FROM WISCONSIN

For many years the wood turtle, *Clemmys insculpta* (Le Conte), was listed as not occurring west of Ohio. There were no records from Michigan until 1915, when Ruthven and Thompson reported finding it in Schoolcraft, Manistee, and Missaukee Counties in that state (Occasional Papers, Mus. of Zool., Univ. of Mich. No. 12). As Schoolcraft County is in the Northern Peninsula, a region geo-

graphically a part of Wisconsin, it seemed not unlikely that the species would range into our state, although neither that keen field naturalist, Dr. P. R. Hoy (Geology of Wisconsin, Vol. I, pp. 422 to 425, 1883), nor my old friend Higley (Transactions, Wisconsin Ac. of Sciences, Arts and Letters, Vol. VII, pp. 155-176, 1889) seem to have noted it. Stejneger and Barbour (Checklist of N. A. Amphibians and Reptiles, 1917) do indeed give it as occurring in Wisconsin, but on what authority I do not know.

When, therefore, in 1917 the Wisconsin Geological and Natural History Survey, cooperating with the U. S. Biological Survey and the University of Wisconsin, began the study of our land vertebrates, this was a form the field men were especially instructed to watch for. On May 24, 1917, Mr. H. H. Sheldon, then a member of our field party, took a single specimen in bog land among oak timber, near St. Croix Falls, Polk County. This locality is close to our westernmost boundary, and extends the range of the species westward some three-hundred miles. Other specimens of the same form are reported to have been seen in the same vicinity, but we have not been able to secure them. Diligent search in other parts of the state has also failed to disclose further specimens. Nevertheless, the authenticity of the occurrence here recorded is beyond question.

The specimen itself, U. W. 2051, is in perfect condition. As it had been in formalin for several weeks before its importance was recognized, nothing can be said of its coloration. However in this, as in all details of color pattern, it agrees very closely with a specimen (U. W. 1998) from Pennsylvania. In its present condition the plastron of our Wisconsin specimen is more yellowish than the other, and its gular plates are somewhat longer. As the Wisconsin specimen is decidedly larger than the latter,

this difference in the gular plates may be due to age.

I add the measurements of the two specimens:

	<i>Wisconsin</i>	<i>Pennsylvania</i>
Length of carapace.....	169	114
Greatest width.....	123	87
Length of plastron.....	151	110
Greatest width.....	104	72

Certainly the small number of recorded specimens of this form from regions west of Ohio can be no true measure of its frequency. Is it not probable that there are very important facts concerning its habits that we have so far overlooked?

GEORGE WAGNER,

University of Wisconsin.

THE EGG LAYING OF AN ANOLIS IN CAPTIVITY

A rather emaciated specimen of *Anolis carolinensis* Cuvier obtained from a barker, was under observation in a small terrarium for about one month when the activity upon which these notes are based was witnessed.

About 7:30 A. M. on June 11, 1921, the specimen was noted to act in a most peculiar manner, such as burrowing her head in the soil of a small plant receptacle and moving about the cage in a very restless manner. At this time the writer was unfortunately called away for a few moments but is able to record the following from the report given by C. M. Breder, Jr. The Chameleon settled near the top of the cage, three feet grasping a twig tightly and the remaining hind leg stretching out freely in the air. The vent was widely distended and a white substance was protruding, the animal giving every evidence of straining. Shortly with a sudden convulsion an object was voided and on falling it struck a small stone with a click, and bounced to a considerable height. It was immediately recog-

nized as an egg. It measured 11 by 6 mm. and was a dead white with a rather tough shell and of a regular elipsoidal outline. The female evidenced considerable interest while the egg was removed for examination, twisting and craning its neck in a most curious and inquisitive manner. Then when the egg was returned and placed on top of the flower pot she made quite a commotion moving about near and around the egg. In the afternoon some leaf mould and sphagnum moss was placed on the earth and banked up around the egg for fear that it might be harmed if left entirely exposed. Later that day another egg was found near the first one which had probably been laid some time before. This was dark brown in color from resting on the soil and rather shriveled. It was then that a half made hole was observed, and the peculiar actions of this lizard two days previously were recalled when rather similar activity had been noted. By the time eight days had passed the second egg had assumed the appearance of the first, being shrunken and dark brown, having apparently likewise taken this color from the earth upon which it rested. In this manner the eggs finally shriveled away.

RUTH BERNICE BREDER,
Newark, N. J.

TOADS IN REGULATING INSECT OUTBREAKS

The importance of toads in assisting to check insect outbreaks was remarkably illustrated in Cache County, Utah, last August. The third brood of the sugar-beet webworm developed such proportions in the Benson district that many fields of beets were partly or wholly destroyed. As the webworms increased in number and size, however, natural enemies were attracted and did much to destroy the insects—but unfortunately not until great damage had been done. Among these enemies were astonishing num-

bers of our common toad, *Bufo woodhousii* Girard. Most of the toads were of this year's brood, ranging in length from one and a fourth to one and a half inches. I would estimate that in one field of about one square acre there were no fewer than one-hundred toads.

An examination of the stomach contents of a number of toads disclosed the fact that they were feeding exclusively upon the webworms and that every one was gorged to the limit. These small toads contained from 24 to 40 worms each, the limiting factor in quantity being the size of the stomach. A number of representative toads were weighed, and the stomach contents of each were then removed and weighed. It was found that the contained food represented 16 percent of the total weight of the toad. If the toad fills its stomach four times every twenty-four hours, as Kirtland maintains,¹ these toads were daily eating a mass of webworms two-thirds their own weight!

From this case it would appear that the toad exhibits the same valuable adaptability in the presence of an insect outbreak as has been observed in birds. Not only is there a concentration in numbers of toads in the infested area, but the dominating insect, especially if present in great numbers, is eaten almost to the exclusion of the insects and other invertebrates normally constituting its food.

H. J. PACK
Logan, Utah.

¹U. S. Dept. Agr. Farmers' Bull. 196, p. 13.

HERPETOLOGICAL NOTES FROM NORTH CAROLINA

Red-backed Salamander (*Plethodon cinereus*, form *erythronotus*). The first capture of these salamanders in the vicinity of Raleigh occurred on May 7, 1921, when about fifteen or twenty of them were taken by Mr. Sherman and myself under rot-

ten wood and dead leaves on a steep slope, sloping down to the south bank of Crabtree Creek about nine miles west of town. The slope was covered with a thick growth of bushes mainly *Kalmia latifolia* and *Rhododendron catawbiense* while a nest of the Black Vulture situated under an overhanging rock and containing one young one, added still further variety to the fauna.

Southern Toad (*Bufo terrestris*). One taken at Fayetteville, May 28, 1920, and two more on June 4 and 6, 1921. The common toad of the region however appears to be *Bufo fowleri*. Narrow mouthed toads and what I took to be carpenter frogs (*Rana virgatipes*) were heard calling at the same place around the Victory cotton mills pond on the night of June 5.

Wood Frog (*Rana silvatica*). One taken by Franklin Sherman, State Entomologist, at Blowing Rock, in early September, 1915. The specimen was about half grown.

Coral Snake (*Micrurus fulvius*). Our state records so far are, Montrose, Hoke County, one killed July 29, 1912, and later sent to State Museum by Dr. M. E. Streeter, one live one offered to State Museum in August, 1917. One picked up dead not far from Topsail Inlet, Pender County, May 30, 1915, by Mr. Empie of Wilmington and seen by Curator H. H. Brimley of the State Museum. One offered to State Museum in preserved condition in August, 1917.

Muhlenberg's Terrapin (*Clemmys muhlenbergii*). On June 6, 1916, Rev. Theodore Andrews of Lexington, N. C., told me that about 1907 a Mr. Tomlinson of Philadelphia told him that he had collected a Muhlenberg's turtle in Clay County, North Carolina and spoke of it as quite a find. Mr. Tomlinson was interested in minerals or ores, but had a collection of turtles.

C. S. BRIMLEY,
Raleigh, N. C.

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EDITED by J. T. NICHOLS, American Museum of Natural History.

